

CLAIM AMENDMENTS

1-36 (Cancelled)

37. (New) A solid-state laser or laser amplifier comprising:
a laser gain material for emitting a laser beam along an axis,
at least one pump light source for pumping the laser gain
material with a pump beam that enters the laser gain material
through an entry surface area along an axis at least approximately
perpendicular to the axis of the laser beam, and

optical elements for focussing the pump beam in said laser
material,

wherein the laser gain material has an entry surface area and
at least one interface opposite the entry surface area, said
interface being configured such that said pump beam is reflected by
said interface to again pass through said laser gain material.

38. (New) The solid-state laser as set forth in claim 37,
comprising a reflector which receives said pump beam after
reflection by said interface and directs said pump beam back into
said laser gain material for a further time.

39. (New) The solid-state laser as set forth in claim 38,
wherein the reflector is a cylindrical mirror.

40. (New) The solid-state laser as set forth in claim 38,
wherein the optical elements and the reflector create respective
images that overlap partly or fully.

41. (New) The solid-state laser as set forth in claim 37,
wherein said surface area through which said pump beam enters said
laser gain material is flat.

42. (New) The solid-state laser as set forth in claim 41,
wherein said interface at which said pump beam is reflected is flat.

43. (New) The solid-state laser as set forth in claim 42,
wherein the axis of the laser beam is substantially parallel to said
surface area and said interface.

44. (New) The solid-state laser as set forth in claim 37,
wherein said interface at which said pump beam is reflected is flat.

45. (New) The solid-state laser as set forth in claim 37, wherein the pump beam is polarized in a first polarization state and the laser further comprises a reflector that receives said pump beam after reflection by said interface and directs said pump beam back into said laser gain material for a further time, and an optical element that is interposed between said laser gain material and said reflector and through which said pump beam passes when passing to and from the reflector and which alters the state of polarization of the pump beam to a second polarization state.

46. (New) The solid-state laser as set forth in claim 45, wherein the pump beam is linearly polarized and the optical element interposed between said laser gain material and said reflector is a lambda quarter plate.

47. (New) The solid-state laser as set forth in claim 45, further comprising a separating element located between the pump light source and the optical element that alters the polarization state of the pump light, wherein said separating element receives both pump light in the first polarization state and pump light in the second polarization state and directs the pump light in the first polarization state to the laser gain material and directs the pump light in the second polarization state to a reflector that reflects the pump light in the second polarization state to the laser gain material.

48. (New) The solid-state laser as set forth in claim 47, wherein the separating element is a polarization beam splitter.

49. (New) The solid-state laser as set forth in claim 37, comprising a plurality of linear pump light sources arranged perpendicularly to their linear extent and juxtaposed laterally, and wherein the pump light sources emit pump beams that impinge on said laser gain material at diverse angles of incidence.

50. (New) The solid-state laser as set forth in claim 37, comprising a plurality of linear pump light sources arranged in line parallel to their linear extent for the purpose of pumping a stripe region of the laser gain material, said stripe region being of a length that is a multiple of the length of said individual pump light sources.

51. (New) The solid-state laser as set forth in claim 50, wherein the plurality of pump light sources are separated from each other.

52. (New) The solid-state laser as set forth in claim 50, wherein the plurality of pump light sources are arranged in groups.

53. (New) The solid-state laser as set forth in claim 50, wherein said stripe region is composed of discrete segments.

54. (New) The solid-state laser as set forth in claim 37, comprising at least two heat sink members of high thermal conductivity for cooling the laser gain material, the heat sink members being separated from each other by a gap that allows the pump light to enter the laser gain material.

55. (New) The solid-state laser as set forth in claim 37, wherein the laser gain material is configured as a rod with at least two main surfaces each having an entry surface area, the rod has interfaces opposite the entry surface areas respectively, the laser comprises at least two pump light sources for pumping the laser gain material with respective pump light beams that enter the rod through said entry surfaces respectively, the laser further comprises optical elements for imaging the pump light sources into the laser gain material, and the interfaces are configured to reflect the pump beams that enter the rod through the respective entry surface areas to again pass through the laser gain material.

56. (New) The solid-state laser as set forth in claim 37, characterized in that some or all of said technical elements defined in the preceding claims for imaging, redirecting, reflecting or polarizing said pump beams also find application for said beams coming from the other side(s).

57. (New) The solid-state laser as set forth in claim 38, wherein the optical elements create an image in a first region of the laser gain material, the reflector creates an image in a second region of the laser gain material, and the laser comprises a further reflector that receives pump light reflected by the reflector, from the second region, and directs the received pump light to said first region.

58. (New) The solid-state laser as set forth in claim 57, comprising a diversion reflector that receives pump light that has passed through said second region and directs the received pump light into a third adjacent region, and so on, to then be directed from said last region passed through in the reverse sequence through said regions as passed through prior.

59. (New) The solid-state laser as set forth in claim 57, comprising a second pump light source that emits a second pump beam that passes through the second region, and a diversion reflector that receives the second pump beam from the second region and directs the second pump beam to the first region.

60. (New) A solid-state laser or laser amplifier comprising:
a laser material having an entry surface area and at least one interface opposite the entry surface area,
at least one pump light source for pumping the laser material with a pump beam through said entry surface area along an axis at least approximately perpendicularly to the axis of a laser beam substantially absorbed in the laser material,
optical elements for focussing the pump beam in said laser material, and
an external reflector following said opposite interface for receiving said pump beam and reflecting said pump beam back into said laser material, whereby the pump beam again passes through the laser material.

61. (New) The solid-state laser as set forth in claim 60, wherein the reflector is a cylindrical mirror.

62. (New) The solid-state laser as set forth in claim 60, wherein the optical elements and the reflector create respective images that overlap partly or fully.

63. (New) The solid-state laser as set forth in claim 60, wherein said surface area through which said pump beam enters said laser gain material is flat.

64. (New) The solid-state laser as set forth in claim 63, wherein said interface is flat.

65. (New) The solid-state laser as set forth in claim 64, wherein the axis of the laser beam is substantially parallel to said surface area and said interface.

66. (New) The solid-state laser as set forth in claim 60, wherein said interface is flat.

67. (New) The solid-state laser as set forth in claim 60, comprising a plurality of linear pump light sources arranged perpendicularly to their linear extent and juxtaposed laterally, and wherein the pump light sources emit pump beams that impinge on said laser gain material at diverse angles of incidence.

68. (New) The solid-state laser as set forth in claim 60, comprising a plurality of linear pump light sources arranged in line parallel to their linear extent for the purpose of pumping a stripe region of the laser gain material, said stripe region being of a length that is a multiple of the length of said individual pump light sources.

69. (New) The solid-state laser as set forth in claim 68, wherein the plurality of pump light sources are separated from each other.

70. (New) The solid-state laser as set forth in claim 68, wherein the plurality of pump light sources are arranged in groups.

71. (New) The solid-state laser as set forth in claim 60, comprising at least two heat sink members of high thermal conductivity for cooling the laser gain material, the heat sink members being separated from each other by a gap that allows the pump light to enter the laser gain material.

72. (New) The solid-state laser as set forth in claim 60, wherein the optical elements create an image in a first region of the laser gain material, the reflector creates an image in a second region of the laser gain material, and the laser comprises a further reflector that receives pump light reflected by the reflector, from the second region, and directs the received pump light to said first region.

73. (New) The solid-state laser as set forth in claim 72, comprising a diversion reflector that receives pump light that has passed through said second region and directs the received pump light into a third adjacent region, and so on, to then be directed from said last region passed through in the reverse sequence through said regions as passed through prior.

74. (New) The solid-state laser as set forth in claim 72, comprising a second pump light source that emits a second pump beam that passes through the second region, and a diversion reflector that receives the second pump beam from the second region and directs the second pump beam to the first region.